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UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE

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BRANCH OF RESEARCH

MONTHLY REPORT

OF

DENDROLOGY

FOREST PRODUCTS

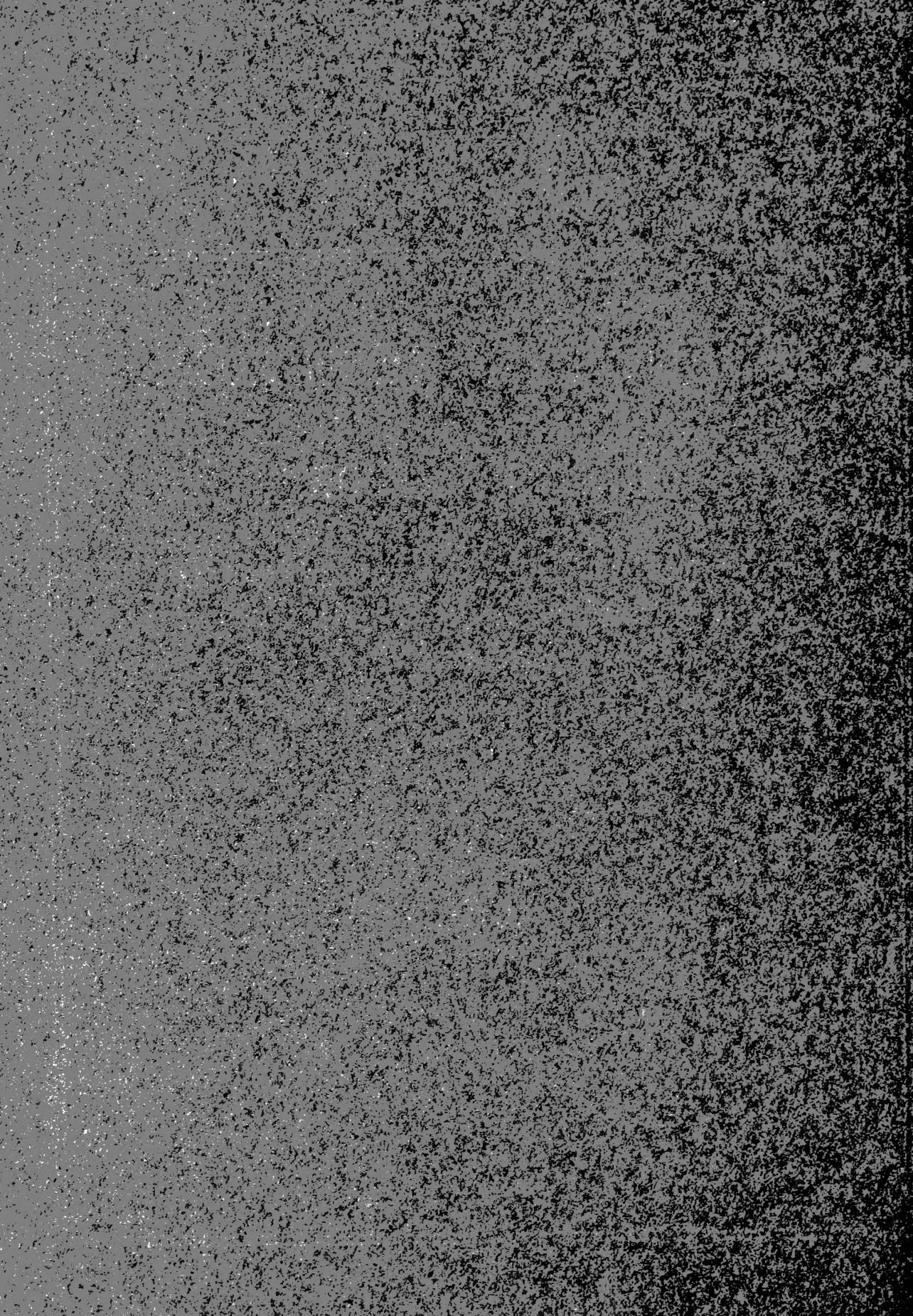
FOREST EXPERIMENT STATIONS

FOREST ECONOMICS

GRAZING RESEARCH

June, 1927.





BRANCH OF RESEARCH

June, 1927

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Santa Rita



## FOREWORD

### SCIENTIFIC RESEARCH

The work of the artisan can generally be planned so that a definite result may be produced in a given period of time. Like travel over a familiar highway, his work encounters no unexpected turns or obstructions. Not so with the work of the scientist or research investigator. He is a pioneer exploring new domains of facts which have never been compiled and whose behavior has never been studied.

Before the scientist ventures to state his conclusions in the form of truths upon which practice may proceed with assurance, he must spare himself no pains in finding and analyzing the facts, and he must also make certain that he does not overlook any facts and relationships which have a material bearing upon his problem and which might invalidate his findings. Such a task can not be performed hurriedly. ---Richard T. Ely.

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### THE TECHNICAL BULLETIN AS A WRITER SEES IT

Journal of the American Society of Agronomy

Carleton R. Ball, Agronomist, U.S. Dept. Agriculture

The very title of this paper itself raised some interesting questions. Writers are diverse. They differ in education, training, experience, ability, and sympathy. The word sympathy is used here in its exact meaning of feeling with others. If writers are diverse, their viewpoints concerning technical bulletins are likely to be equally diverse. This topic may be developed so as to present a composite picture of the ideas of writers as a genus. On the other hand, it may be developed to show the diverse viewpoints of different writers as individuals. It is hoped that it may do both.

### PERSONAL FACTORS

There are some considerations personal to the writer that must not be forgotten. These are (a) his impatience for publication, (b) his sense of ownership or kinship in his product, and (c) his own particular limitations. Some or all of these influences are sure to be factors in every publication.

(Over)

## IMPATIENCE

The writer of a technical bulletin presumably has spent months or even years attending to the numerous complex and oftentimes tedious details of the investigation upon which the publication is based. Many data have been assembled and interpreted. Certain important or possibly fundamental facts stand out. The investigator wishes to present these facts to the public as quickly as possible. He is impatient to do this for several reasons. The work has been done and he wishes to see the results in print. His mind is now centered on the next phase of the study, or on a new line which he is developing, and he wishes to be free from consideration of the old. In the third place, writing often is a laborious and uninteresting process to an investigator and he wishes to have it over as quickly as possible.

## KINSHIP

A manuscript is a part of the very life of the writer. It is more than the product of his hand. It is the product of his mind, heart, and soul, because the best of his mind, heart, and soul have gone into the studies on which it is based. It is the intimate expression of his labor and his genius, a veritable child of his creative faculties, as dear to him as a child of flesh and blood. Those who deal with it later should remember these things, if they are to be helpful to the author.

## LIMITATIONS

This sense of ownership, almost of kinship, tends to bind him to the sins of omission or commission which it may contain. The poet's prayer, "Oh, wad some power the Giftie gie us, to see oursel's as ithers see us," was never more needed by any one than by the writer of bulletins. The man who can not write correct English does not see his ungrammatical constructions. The man who has a limited vocabulary does not realize the lack of clearness which results from his failure to use words carrying exactly the meaning or shade of meaning desired. The man whose style is verbose and redundant does not recognize the verbosity and redundancy of his writing. The man who is accustomed to long and complex sentences does not perceive the value of short, concise statements. Because he is unable to see the errors and faults of his work, he may be indifferent to suggestions of needed change, and resentful of changes made.

What is the remedy for the effect of these personal factors? Obviously, true perspective is the only remedy. The writer needs to stand off and study his product from new and different mental angles or viewpoints. First, he should put it away and let it get "cold." This may require ten days, or two weeks, or a month, depending on the person and on how completely he can forget it. At the end of this necessary period the writer can read his paper with something of the impersonal viewpoint from which others see it. Then only can he appreciably better it.

## SCOPE AND CONTENT

It may be supposed that all writers would agree as to the purpose of a technical bulletin. This is by no means certain. It is probable that some look upon the bulletin as a repository of information, a sort of receptacle into which all available information is poured for safe keeping. This makes for an encyclopedic type of publication, often of much reference value but likely to be large, expensive, and not adapted to general use. It is probable that a larger number regard a publication as a vehicle for the conveyance of their ideas to others. Assuredly the latter is the correct viewpoint, though if the bulletin be a conveyance it must first of all be a receptacle.

Agreeing that the purpose of a technical bulletin is to contain and convey technical data, the question falls on the scope of these data. In general, the writer wishes to present five series of facts. These are: (1) A review of the literature of the subject, (2) the materials, methods, and conditions of the experiments, (3) the assembled results of the investigation, (4) a summary of the important data, and (5) a list of literature cited, or a bibliography.

In any given bulletin there may be a departure from this scope. If the subject is new, there may be no literature to review. If the subject is narrow, no review of literature may be necessary. If the paper is one of a series, each presenting results obtained with a single variable in materials, methods, or conditions, the discussion of the nonvarying factors may not be repeated each time. If the subject is comparatively new, there may not be a bibliography. For most pieces of investigation, however, the scope of the presented results will cover these five points.

## REVIEWS OF LITERATURE

In reviewing the literature of his subject, the investigator should present the work and conclusions of other investigators as completely and yet as concisely as possible. Each review should be brief, clear, and accurate. There is the widest difference in the abilities of different writers to summarize the essentials of published data. Not all reviews meet these specifications. The temptation always is present to sacrifice brevity in a desire to make them complete. It is easier to write many words than few. It also seems fairer to an author cited to discuss his qualifying statements as well as his primary conclusions. In other cases, the reviewer fails to distinguish between those papers which are important and those which are not. He treats all alike, and either generously or briefly, as the case may be.

Perhaps the greatest weakness of reviews of literature is the incompleteness. This may be due to several causes. The investigator may be self-centered and indifferent to the work of others. He may be pressed for time or lack adequate library facilities. Often he is not fluent in other languages than his own and, therefore, is inclined to neglect papers of foreign investigators. The reviews of literature are important and necessary. They are worthy of the best attention of the writer, not only for their own sake but because their quality is an evidence of the breadth of his perspective on the subject.

(To be continued)

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PHOTOGRAPHIC EVIDENCE

Carl Hartly  
Bureau of Plant Industry

(Note: this was a letter from Dr. Hartly to Phil. W. Wakeley)

I have recently received the prints from the photographs which you ordered for me. Thank you! I must confess that I can't see evidence of stunting from the photographs except in the roots of the shortleaf and loblolly on the zinc plots. The pictures of the beds themselves, of course, show reduction in number of seedlings but seem to me inconclusive as to any reduction in size. Your measurements will be interesting.

This gives me an opportunity to air an idea I have had for some time as to sampling method in getting specimens for photographic evidence. Photographs are found very useful in showing the difference between typical seedlings with one treatment and typical seedlings with another treatment. The trouble is always to get typical seedlings. In some of the published Austrian work it was quite possible to demonstrate from the measurements also given in the paper that the photographed plants were not really typical. To eliminate the personal element and make such selections for photographing as directly comparable as possible it seems to me that what I am calling percentile sampling would be an excellent thing. My idea would be to take all of the seedlings that had been given a particular treatment or had descended from a particular parent, or for any other reason were to be handled as a group and arrange them in ascending order for the character to be exhibited. If the distributions in the different groups which were to be compared were similar, I would then take from each group the median plant to represent the group photographing - i.e. if there were 49 plants in the group I would take the 25th. If the distributions of the sizes or whatever you were studying did not seem to be normal, I would perhaps also take other percentiles in addition as, for example, the 1st and 3rd quartiles. In this case for a population of 49 one would take the 13th, 25th and 37th plants to represent the group. When the population is large or very irregular and it is practicable to do so, one might take a still larger number of the percentiles, as, for example, the sextiles or deciles. This plan could also be followed when the sample is wanted not for purposes of photographing, but in order to get representative plants as subjects for very detailed measurements which it was not possible to make on all the plants in the population. The plants could be arranged in order of magnitude either for the character studied as indicated by inspection or in order of some closely related and more easily measured character.

If one were taking root samples from an experimental plot in which it was not possible to dig up all of the plants he could get the height of all of them, determine the median or mean of these height measurements and dig up the seedling nearest in height to this median or mean value; quartiles or other percentiles could be added in this case just as in the sort of case first mentioned. The median seems to me better than the mean for most of such work although I can conceive of cases in which the mean would be preferable. In such cases if other samples were taken as well as the central sample of the group, one might determine the standard deviation and take two plants which differed from the mean measurement by the amount of the standard deviation - plus and minus respectively.

The latter part of the above suggestions are partly suggested by Maskell, page 381, in one of the papers in the very interesting Proceedings of the Imperial Botanical Conference in London, 1924. Maskell failed to stress the point that the criterion on which the sample plants were selected must be at least one which was closely correlated with the character which is to be studied in the samples.

The sort of study for which I have been figuring on such a scheme is one in which we have to determine the degree of infection on different plants by a leaf parasite. The measurements required on each leaf in such cases are so laborious that it is altogether impossible to make measurements on very many leaves. It is, however, possible to arrange a large number of leaves in approximate order of degree of infection and then take percentiles out of the series for detailed measurements.

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RESOLUTION IN REGARD TO THE ORGANIZATION  
OF A SUB-COMMISSION ON FOREST SOILS

A large number of delegates to the First International Soil Congress assembled in Washington, D.C., have met together on June 17 and 20, 1927, to hear and discuss papers on forest soils. These delegates have organized informally a sub-commission on forest soils. They have the honor to present to the Executive Committee of the Congress the following recommendations:

1. The great awakening of interest in forestry which is now taking place in countries of large forest areas like the United States, Canada, South America, Russia, Finland, Sweden, and Norway, brings forcibly to the front many important problems of forest soils. Forest soil science is one of the most important scientific foundations of forest practice. Forest soils involve very different problems from farm crop soils in that they can be studied only under natural conditions.
2. The next International Soil Congress, if conditions permit, is to be held in Russia. This is a country of vast forests and forest soils. Russian soil scientists have made notable contributions to soil science, and forest soils will inevitably form an important phase of the discussions.
3. For these reasons the delegates to the First International Soil Congress interested in forest soils strongly recommend to the Executive Committee of the Congress that forest soils be recognized as an important branch of soil science and that the informal sub-commission of this Congress on forest soils be made permanent.

COMMITTEE ON FOREST SOILS:

Barrington Moore (United States).  
Gustav Kräuss (Germany).  
Eduard Schuster, (Germany).  
D. Albert, (Germany).  
Henrik Hesselman. (Sweden).  
Raphael Zon. (United States).  
Peter Treitz (Hungary).  
J. Kittredge, Jr. (United States).  
Fr. Weis (Germany).

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## FOREST EXPERIMENT STATIONS

### Washington

#### New Station Developments

Mr. Clapp, in company with Mr. E. F. McCarthy, Director-elect of the forest experiment station for the Ohio-Mississippi Valley region, spent two weeks touring the Central States looking for a desirable headquarters location. After considering some 10 or 15 places, recommendation was made to the Forester and the Secretary with the result that on July 2 the Secretary decided to establish the headquarters at Columbus, Ohio, in cooperation with the Ohio State University and the Ohio Agricultural Experiment Station. The station staff was notified of the decision and work was started under the direction of Eyre, who took care of the field parties temporarily at Portsmouth, Ohio.

Three men and a clerk have so far been assigned to the Station. These include L. F. Kellogg and J. H. Hanley, Junior Foresters, and Bernard S. Meyer, Associate Forest Ecologist. Meyer will report in September following the completion of his teaching contract at Ohio State. Mrs. Louise L. Davis is being transferred from the Natural Bridge National Forest to the new station.

The survey for the Allegheny Station probably will be made in early July, when Forbes is able to leave the Southern Station work. The Allegheny temporary men are reporting to Prof. McIntyre of Pennsylvania State College and they are working with him upon problems in the "oak barrens" near the college.

O. M. Wood, Junior Forester, is being transferred from the Payette National Forest in District 4; A. F. Hough, also assigned to the Station, is now in Europe with the Oxford Imperial Forest School students, and will return some time in August. Miss Clara M. Skamser, from the Rocky Mountain Station, will assume the duties of Principal Clerk following Bates' transfer to Madison.

A number of vacancies at both the two new stations yet remain to be filled. This will probably be done from the eligibles from the silviculturist examination.

#### Biological Section

The Biological Section was officially established at Madison on July 1 as a part of the Forest Products Laboratory work. C. G. Bates, Director of the Rocky Mountain Station, will assume his duties at Madison on the completion of various details at Colorado Springs.

He will sever his connection with the Rocky Mountain Station some time in July. He plans for a field trip to the western districts before settling down to the work at Madison this fall.

#### Research Appointments of Interest

In addition to the appointees at the new stations previously mentioned, A. L. MacKinney has been appointed to the Appalachian Station from the Junior Forester register. Similarly also, V. L. Harper, of California, has accepted a place at the Southern Station, where he will be associated with Wyman on naval stores work at Starke. B. L. Lexen has been transferred from the Weiser Forest in District 4 to the Coconino, filling the position left vacant by the resignation of McIntyre. Lexen will work upon the slash disposal problem and also assist the experiment station in various other lines of work. The position he is filling is a cooperative one between the Southwestern Forest Experiment Station and the District. This position is somewhat similar to that filled by Eugene Gemmer on the Choctawhatchee Division of the Florida Forest, where Gemmer is working upon natural reproduction problems in connection with the staff of the Southern Forest Experiment Station.

Daniel Pingree, from the White Mountain Forest, has been appointed to the Taxation Inquiry. He is now working at St. Paul.

The appointments of Averell and Mowat, Junior Foresters, to the Lake States Station, have been previously noted.

Bernard S. Moyer, Associate Forest Ecologist, who took the examination a year ago, got his Doctor's degree in physiology and ecology under Dr. Transeau at Ohio State University.

#### Silviculturist Examination

Thirty-five men took the examination for positions in the various grades of silviculturist which closed in May, 19 of the group being rated in the assistant grade. A considerable number of those taking the examination failed to qualify for the grade for which they applied and were therefore rated in a lower grade. A few failed to meet the minimum requirements and were barred from the examination.

#### Soils Congress

The Soils Congress is commented upon by the various experiment stations which had men in attendance. It is sufficient to say that the meeting was an important one from many standpoints and profitable to those who attended. Various reports of the meeting have appeared in the Ser-

vice Bulletin and elsewhere. Eight men from the experiment stations were in attendance and the Washington office was badly disorganized as a result. The Soils Congress resulted in a considerable number of foreign foresters being present in America, many of whom are now visiting the experiment stations. It is unfortunate that a single trip for all the foreign foresters could not be provided, but diversity of interest and the necessity for some men to arrange a definite schedule in a limited time, prevented.

### Mississippi Flood Control

A comprehensive study of the effect of forest cover upon streamflow and erosion in the Mississippi Valley was begun at the instance of the Forester. A committee was formed to draw up a preliminary plan which was finally arranged, the details of which were finally prepared early in July. The assignment for the study was made to Mr. Sherman in view of the very great amount of work facing the Branch of Research during the coming summer. Research agencies in the entire Mississippi Valley region will be called upon, however, for considerable data. Kellogg has been assigned by McCarthy to this work and from the middle of June on has been devoting all his effort to assisting Reynolds, who is compiling maps and statistical information. In connection with this study the Forester has requested the publication of a paper on the position of the Forest Service in regard to erosion and floods, the preparation of the paper being assigned to Mr. Ward Shepard. Zon's old paper in the Final Report of the National Waterways Commission on "Forests and Water in the Light of Scientific Investigation," is being reprinted in a large edition for general distribution.

### Publications

Two requirements report publications are expected early in July, one dealing with the Central Hardwoods and the other with the Pacific Northwest. Postcards to the extent of 150,000 were sent out for the central hardwood bulletin, using stencil mailing lists furnished by State Foresters and Agricultural Experiment Stations in the central hardwood states. Already returns are being received. The card distribution is taking care of those not reached on regular mailing lists and the regular distribution made of Service publications.

In a similar manner, 40,000 cards for Munger's Douglas fir report were prepared and distributed, some of them from Washington and some from the Pacific Northwest. The card notice of publication is an admirable one for reaching a very large audience who might otherwise not be reached. Past experience with this system indicates its desirability. As the cards are received special envelopes are addressed and made ready for mailing as soon as the publication becomes available.

## Mensuration

The greater part of the time of the section was again devoted to the western white pine yield study on which Haig has been working since early winter. Additional work was performed for the North-eastern fire study, for the southern pine plantations and miscellaneous work, including in the tabulating section work upon accounts and other jobs.

## Library

In June the librarian loaned 959 books and periodicals, and 135 members of the Service and others consulted the library in person.

During the month, there were 234 books and articles indexed for the card catalogue.

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## NORTHEASTERN FOREST EXPERIMENT STATION

The fourth field meeting of the Northeastern Forest Research Council was held at the Pack Forest of the New York State College of Forestry at Cranberry Lake on June 23-24. Only about half the members were present but the meeting was an interesting and enthusiastic one nevertheless. Most of the time was spent in the inspection of experiments under way on the Pack Forest and the forest of the New York State Ranger School at Wanakena. Particular interest was manifested in the fire weather studies at which records are now being obtained for the third consecutive season. These show the fire hazard in the western Adirondacks to be normally much lower than in many other parts of the Northeast.

A short business session was held at which the discussion centered largely around ways and means of assisting in the passage of the MacSweeney bill. Legislation along this line was recommended by the Council at its meeting a year ago. The subject has also more recently been taken up with the other forest research councils. Cooperation between the Experiment Station and other agencies came in for its usual consideration. President Lewis of the Massachusetts Agricultural College has recently resigned from the Council in anticipation of his move next fall to the University of New Hampshire.

Dana spent the first ten days of June at Ann Arbor, following which he took in the International Congress of Soil Science at Washington. The Station was also represented at the Congress by Westveld and Gast. The latter spent a considerable part of his time while in Washington in consultation with Weather Bureau officials and in the calibration of the hemispherical thermopile invented by him, on which the Department is now endeavoring to secure a patent.

Behre has indicated his intention of resigning from the Forest Service in order to go into the business of raising farm and forest crops near Amherst. He will be on leave without pay for a time after which he will return to finish the farm study on which he is now engaged.

Dana expects to complete his Service work about the first of August and will leave for the University of Michigan early in September.

Spaulding spent several days on the European larch canker which was found in a plantation of European larch in eastern Massachusetts. The stock was imported directly from Scotland and there can be no doubt as to the identity of the disease. He also made brief trips to get notes upon the decay of slash under various conditions.

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#### LAKE STATES FOREST EXPERIMENT STATION

In spite of unfavorable weather conditions Kitteredge, Gevorkiantz, and Whitney completed all the spring field work in the establishment of several permanent sample plots and the re-measurement of the reproduction plots on the Minnesota and Superior National Forests.

Zon and Kitteredge attended the International Congress of Soil Science, where each presented a paper. While in Washington Zon served on a committee with Munns, Ashe and Peters to outline the general features of collecting data on the relation of forest to flood control within the Mississippi watershed. After the close of the Soil Congress, Kitteredge left on an official visit to Petersham, the White Mountain Forest, and the Northeastern Forest Experiment Station.

In the way of nursery work, 3000 jack pine, white pine, and Norway pine transplants, received at the Northern Peninsula Branch from the State nursery at Higgins Lake, were set out. For the most part, this stock appears to be taking hold in spite of the delay in planting and the poor condition of the nursery site. Two plots were sown with the hemlock seed collected by Wackerman last fall and a germination test started.

Tagging and measuring the trees on the two cutting plots has now been nearly completed. Woodcutters have been at work getting out chemical wood left last fall on the cutting area. This has made it impossible so far to lay out the reproduction and slash disposal plots.

Gevorkiantz has been completing odds and ends of his two and one-half years' work at the Station, chiefly in connection with the selective logging study, prior to leaving for Harvard.

Averell reported making himself familiar with the work of the Station on the different projects, especially the project, "Effect of Water Level in Swamps on Forest Growth." He has also been compiling some material on the climatic, soil, and topographic conditions of the watersheds within the Upper Mississippi basin.

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#### APPALACHIAN FOREST EXPERIMENT STATION

##### General

Frothingham, Hursh, and Haasis attended the International Soils Congress at Washington. At the conclusion of the Congress the Station was honored by a visit from Dr. Henrik Hesselmann and his son.

Professor M. Dracea, a Roumanian silviculturist, and Mrs. Dracea spent a few days in June and early July in Asheville. Professor Dracea has been greatly interested in a study of forest conditions in the Southern Appalachians.

The North Carolina State Forest Fire Control Conference was held at Black Mountain on June 16. This conference was made up chiefly of district foresters and county wardens. Korstian addressed the Conference on forest fire investigations which were being conducted by the Station.

Dr. J. V. Hofmann and 14 students of the Pennsylvania State Forest School passed through Asheville en route to Waynesville, N. C., where the party will camp several weeks. Visits were made to the Biltmore Estate and the Bent Creek Experimental Forest.

Dr. Carl Hartley, of the Washington Office of Forest Pathology, and Dr. R. H. Colley, of the Forest Products Laboratory, were in Asheville two days, during which they visited the Bent Creek Experimental Forest and a number of wood-using plants in the neighborhood of Asheville.

Buell rounded up the oak study to a suitable stopping point and then prepared an outline for the methods of cutting study. A party will make a strip survey of cut-over areas aimed to sample and analyze as large a variety of conditions as possible.

Haasis finished his work at Johns Hopkins University and returned to the Station at the conclusion of the Soils Congress.

## Dr. Hesselmann Visits the Station

Members of the Station welcomed the opportunity to be in the field with Dr. Hesselmann and to discuss with him the forest soil problems of the Appalachian region. Representative forest types and locations were visited. These were the spruce-fir forests and the northern hardwood forests in the vicinity of Mount Mitchell and the moist slope and cove forests, the dry slope and ridge forests, and the alluvial stream bottom forests in the vicinity of the Bent Creek Experimental Forest. The Biltmore Plantations near Asheville were also visited.

Dr. Hesselmann was especially impressed with the rapid and thorough decomposition of litter and other organic material and the absence of raw humus as compared with Swedish forest soils. Although no typical raw humus was observed, it was found that under some pine stands on dry slopes where moisture is deficient the litter is undergoing a rather slow decomposition and resulting in a sour "mull" rather than a fresh or sweet "mold." This condition is of limited occurrence, however, and for the most part, for the areas observed, conditions are entirely satisfactory for favorable decomposition of organic material and for humus formation. On the other hand, Dr. Hesselmann suggests that in some cases decomposition may be somewhat too rapid and complete to allow for the best utilization of the nutrients set free, and that this problem of rapid decomposition merits a thorough study of soil conditions in the southern forests.

Most of the forest soils observed were acid in reaction. This fact alone Dr. Hesselmann believes to be of no great significance, considering the excellent decomposition of organic matter that commonly exists. Dr. Hesselmann is of the opinion that for the areas visited, wherever the forest soil is of adequate depth, the fertility and tilth are quite satisfactory for tree growth. This includes the rhododendron and laurel thickets generally considered as very unfavorable forest sites. The poor site quality of dry south slopes is attributed chiefly to insufficient moisture.

Although examples of surface erosion were observed, true leaching and "podsol" formation was absent. Nitrification and nitrate availability were found to be highest in the coves and near streams, and lowest on the dry exposed slopes, although Dr. Hesselmann regarded nitrification as ample on most sites visited in the region.

Among pertinent soil problems in the Appalachian region, Dr. Hesselman suggests the relation of moisture to decomposition of the organic matter and to humus formation, the reaction and composition of the returning litter from different tree species, the rapidity of nitrification and the loss of nitrates at different periods of the year. He believes that studies of the physical properties of the soil, especially porosity, and the influence of leaf litter and soil organisms on the physical properties will be more desirable in this

region than purely chemical studies. Dr. Hesselmann suggests that sample plots may be advantageously used for these studies and for similar studies, such as the influence of the annual litter return upon the soil, the influence of burning upon the biological activity in the soil, and the effect of cutting practices upon forest soil.

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### SOUTHERN FOREST EXPERIMENT STATION

#### General

June found the Station staff in a general state of tumult and change. At Camp Pinchot, on the Choctawhatchee Division of the Florida Forest, Gemmer settled into his stride. Clarke-McNary Inspector C. F. Evans arrived to share office space with us, marking a most welcome situation in local Forest Service affairs. The loss of Dr. L. J. Pessin and the preparations for Director Forbes' transfer to the Allegheny Station made a very different story. Dr. Pessin had been an exceedingly valuable addition to our staff, personally and professionally, and his departure for Texas A. & M. College will be very keenly felt. Forbes' leaving is in the nature of a tragedy for all of us who have worked with him.

#### Protection, Fire

The only work done on fire protection during the month was a sketchy study by Barrett and Wakeley of the possibility of breaking typical Louisiana and south Mississippi areas up into approximate 40's by fire lines designed to take the utmost advantage of such natural features as swampy bottoms and the wetter baygalls. This work, undertaken in connection with Forbes' Requirements bulletin and based on available maps of experimental areas, showed that there was a surprisingly large possible saving in length of line to be plowed.

#### Measurements

Forbes completed his revision of the mimeographed advance sheets got out in connection with the pine growth bulletin. These sheets are to be distributed to other stations, to lumbermen, and to other agencies and individuals who might be interested in the pine growth bulletin itself upon its completion.

Barrett spent the first half of the month and a few days toward the end of the month on the accelerated growth figures based on the trees measured by himself and Östlin at Urania.

Early in the month the staff met to discuss methods in use for computing volumes on permanent sample plots. Our own work in the past has been unsatisfactorily variable, and we have found surprisingly little available information as to methods approved or in use elsewhere. Forbes wrote a summary of the discussion for the Branch, sending copies to the other stations about the middle of the month, and we have since received a letter from the Branch saying that the practice in Washington is to take an arithmetic average, to the nearest tenth of an inch, of the diameters in each inch class, combine the average for each inch class with the corresponding height from a height diameter curve based on all the trees in the plot, read the volume corresponding to this height and diameter for each inch class from the appropriate alinement chart, and multiply the volume by the number of trees in the inch class concerned. The sum of the inch-class volumes so obtained gives the total volume for the plot. This method makes a considerable saving in time over the method of computing the volumes of all the trees individually, without making an undue sacrifice in accuracy.

#### Management

Forbes' Requirements report occupied him throughout the month to the exclusion of everything except the most pressing administrative work. Wahlenberg and Wakley spent considerable time assisting with this report in the office, especially in graphical analysis of typical southern stands. Wakeley continued with miscellaneous work on taxation, with occurrence of snags in virgin timber and on cut-over land, and, through the medium of the extensive survey, with fire damage and seed tree distribution and their effect on natural reproduction in the longleaf pine type of the Middle Coastal Plain. Demmon visited various State foresters to clear up a number of points concerning practice and policy in the various states and to facilitate compiling the forestry questionnaire previously sent out by the Station. Later he and Barrett and Wahlenberg visited several Louisiana and Mississippi points studying logging damage to seed trees in animal-logged and steam-skidded areas.

Gemmer at Camp Pinchot spent the greater proportion of his time on quadrat counts, shade maps, and core collection and counts on the natural reproduction plots. Demmon worked on the extensive survey data from North Carolina, east Louisiana, and south Mississippi, and Wakeley's work on the south Mississippi sheets in connection with the Requirements bulletin also carried the extensive survey analysis forward a step for that region.

#### Naval Stores

Routine weighing, dipping, and inspection of chipping marked the month at Starke.

## Forestation

Wahlenberg and Wakeley each made a brief visit to the Great Southern Lumber Company's nursery for general information and to examine the plot treated with eight grams of zinc sulphate per square foot. The treated plot showed a slightly higher total mortality of longleaf pine seedlings than did the check plots, and contained a discouraging amount of grass which had come up from roots, but weeds coming from seed were almost wholly lacking, and the treatment promises to become eventually very practicable. The rest of the forestation work was confined to checking the punch card data for the plantations study and to preliminary grouping of the results already obtained from the slash spacing plantations by means of the punch card machine.

Gemmer reports only three longleaf seedlings, all on the trenched spots, left from the 500 seeds sown at Camp Pinchot. Of the longleaf seedlings planted early in February, only 12 per cent survived. As has been noted before, the prime cause of loss in the planting was the attempt to set the stock on an unfavorable site after growth had started in the spring, and it still looks as though planted seedlings had a better chance than those coming up from seed on this extremely dry and sterile soil.

Every trip into the field gives us more encouraging evidence of a good longleaf seed crop in Louisiana and Mississippi, and Demmon reports abundant slash seed at Talisheck, La.

Pessin continued his work on the report on the grazing project at McNeill. He also took Wahlenberg to McNeill for a brief trip over the pastures.

Gemmer notes extensive grasshopper defoliation on longleaf pine near Camp Pinchot.

## CALIFORNIA FOREST EXPERIMENT STATION

A tentative cooperative agreement with the State Forester for the support of the work of the Station has been drafted. The State Forester's budget carries an annual item of \$10,000 for cooperation with the Station and other federal agencies. Of this amount \$7,500 will be allotted for our work. Part of the money will be used for the support of the Devil's Canyon sub-station and the remainder will be applied to the pine region for management and fire studies.

Abstracts of fire reports for all of the National Forests in California for the years 1921-1926 have been completed, involving 45 separate items. The data is now being prepared for carding so that the mechanical facilities at Washington can be used this winter.

## Management

In establishing our permanent sample plots, it has been our aim to enlist the cooperating agencies, Entomology, Pathology, and others, to use our plots for their work.

Two permanent sample plots were established this month, one on the Stanislaus in cooperation with the Office of Forest Management and the Office of Blister Rust Control. This 10-acre plot covers the mixed conifer type on Site 2 and the area will be logged by tractor, following our present silvicultural rules for the type. Management will make the cost studies; the Office of Blister Rust will follow the life history of Ribes; Entomology will study the endemic history of bark-beetles; Pathology will follow the pathological history of the area; and the Station will secure the usual growth, reproduction, and ecological data. The plot will be fenced against stock. One permanent sample plot has been established on the Lassen Forest in the western yellow pine - fir type. Slash on this plot will be left in place. The same cooperative arrangement with other bureaus will be made for this plot.

In cooperation with the Office of Products and Management the Station will participate in the heptane extraction experiment of Jeffrey pine on the Lassen Forest. The Station will assist in the classification of trees and secure the growth data.

## Cover Type

A very interesting sidelight in connection with our cover type survey is the location of old millsites used during the pioneer gold days in the foothill regions of the Sierras. These sites and a few scattered remnants of yellow pine are the visible testimony of the lower limits of timber line as they existed in the 50's. Successive fires, destructive logging, and insect epidemics have converted a vast territory into a dense brush field. Only the oldest settlers remember the days when these present brush areas supported timber stands. It is not unusual to find that the lower timber has been pushed back 15 miles in the last 60 years.

## Southern California

Work on the erosion study at the Devil's Canyon burn is proceeding under the direction of Lowdermilk. The area is being mapped and permanent bench marks established for purposes of measuring soil losses. Meteorological stations are now being selected.

Kraebel, Lowdermilk, Kotok, and Dr. F. E. Clements visited recent burns on the Cleveland Forest for the purpose of selecting ecological exclosure plots.

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PACIFIC NORTHWEST FOREST EXPERIMENT STATION

With the exception of Munger and McCardle, the rest of the staff were in the field practically the entire month. Munger spent nearly a week at Wind River, however, and on June 26 left for District 8 to spend four or five weeks there at the request of District Forester Flory. He is asked to act in an advisory capacity in lining up studies of natural reproduction, growth, and methods of cutting, which the Alaska forest officers are undertaking. Up to the present time timber operations on the Alaska Forests have been small in extent and no particular problems in reforestation have been encountered. Now that Territory is entering upon a new era of logging with the recent 8-million cord sales, which will mean large annual fellings. To work out the proper forest management for these pulp-timber working circles District 8 sees the need of some systematic forest research and is so drawing upon the experience of the Pacific Northwest Station.

Munger and McCardle, being interested in mechanical devices for falling snags, went to see a Wolf Portable Chain saw at work cutting the tops off of 3,000 eighteen-inch piling in Portland harbor at the rate of over 30 an hour. Its chief drawback for woods work is that it is electrically driven.

A digest of the District Investigative Committee report was prepared after its approval by the Washington Office and has been sent to all Supervisors in District 6, all District Foresters, all Experiment Stations, and Forest Schools. This report contained 23 minor studies assigned to Forests and for quite a number of these the Experiment Station had to prepare working plans to send to the field.

To give further trial of fuses, for back firing we have bought a couple of gross and are distributing them to various people who are likely to give them a good test. The type under trial is the "Automobile Emergency Light" which has no metal point, weighs about 8 ounces, burns 12 minutes with a yellow flame at a temperature of 2000° F., and costs ten cents apiece.

Westveld has been in eastern Oregon with a field assistant the entire month putting in permanent plots to test various methods of cutting. He has had great difficulty in finding suitable areas that would be reached by the logging operation in the near future and may have to go outside the centers of work where we would like to concentrate these plots, and also resort to more observational study on temporary plots.

Meyer with two field assistants has been in western Washington continuing the study of the application of normal yield tables to average stands. Of some plots they have made an intensive study of space occupied by individual trees, making a plane-table map on which the position of the stem of the tree is shown but not the crown.

In the upper Wind River valley Isaac with a field assistant has installed several sets of instruments to measure the physical factors of site on a set of plots laid out to illustrate a variety of logged-off land conditions. Evaporation with Livingston cup atmometers, surface soil temperature using specially made goose-neck thermometers, soil moisture, as well as atmospheric conditions will be measured. Plots were sown with Douglas fir seed last year so as to have seedlings to observe. Almost daily observations will be taken of the physical factors and of the seedlings during the critical part of the summer.

Testing of moisture content of forest fuels and determination of inflammability points has occupied most of Simson's time outside of current meteorological work and maintenance. While three men were available at the Station some simultaneous readings of relative humidity were taken over a range of altitude.

McArdle completed the manuscript on Douglas fir yield and this report is now ready for typing. The working plan for the fire behavior study was revised and a tentative working plan prepared for the field work of the Douglas fir slash disposal study. McArdle left Portland June 26 with his assistant to join Hodgson and Johnson of the Office of Products on a logging area northeast of Seattle where the slash disposal study will begin. An attempt will be made to utilize the data obtained by Products in their woods waste study.

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#### NORTHERN ROCKY MOUNTAIN FOREST EXPERIMENT STATION

Field work on the reproduction study and the fire studies got well under way this month with four field assistants on the job. The temporary men this year are: J. A. Larsen, A. B. Hatch, C. C. Averill, and W. W. Koch. Except for the latter, who is a student for a doctorate in chemistry at the University of Illinois, the men are from the Forest Schools at Ames, Idaho, and Montana. This is Larsen's first summer free from duties as a member of the faculty at Ames since he left the Experiment Station several years ago. His summer work here makes it possible to benefit from his long field experience in reproduction studies in the white pine type, and also to take up with him matters dealing with two pending reports of his which are in a state of revision.

Marshall established a six-acre permanent sample plot in a burn on the West Branch of Priest River. The plot contains 72 one-acre quadrats, 36 screened and an equal number unscreened. The reproduction on these was tallied and staked and will be examined annually. An amazing amount of reproduction has started this spring, which is the first year following the fire. The average number of

seedlings is 31 per mil-acre, 90 per cent of which are larch. On half of the plot all of the green trees were tagged. Over 50 per cent of the trees are white pine and the majority of these are already infested with bark beetles. The trees on the remainder of the plot were tallied but not tagged.

One of the features of the reproduction study this summer is to store specific quantities of seed in the duff under four conditions of debris cover: (1) slash pile; (2) broadcast slash; (3) ordinary branch litter as found in virgin timber; (4) duff without litter cover. Spots like these are then to be burned three or four different times during the summer when conditions are very inflammable, moderately inflammable, and when slash burning is considered safe. The seed is to be recovered after burning and to be given germination tests. Instrumental measurements will be made of the moisture content of the materials and of the temperatures attained in the duff at the time of the burning.

These tests will serve both the reproduction study and Gisborne's fire study. A high temperature measuring instrument will be necessary in this work and steps toward its purchase have already been taken. After consultation with stations and agencies which possess such instruments, in which considerable attention was given to the relative merits of the potentiometer and the thermo-electric pyrometer, it has just about been decided to get the latter type of instrument. The pyrometer is simpler, more portable, and less expensive than the potentiometer and has a range and accuracy sufficient for all Forest Experiment Station purposes. Both instruments use chromel and alumel thermo-couples. The Hoskins portable thermo-electric pyrometer is the specific instrument in mind for this Station. There are still several questions which are being taken up with the manufacturers regarding the length of couples, the length of lead-in wires, and the number of couples that may be used simultaneously. After getting the instrument it is planned to compare it with a Leeds and Northrup potentiometer. Dr. Shallenberger, of the Physics Department of the University of Montana, with whom we have been in conference on the subject, has kindly offered the use of one of the University's potentiometers for this purpose.

The inspection of the key fire-weather stations by Gisborne and a member of the Spokane Weather Bureau office was started about the middle of the month and will be finished in the first week of July. The men are traveling in a Station car and covering eight or nine National Forests in northern Idaho and western Montana. Except for the anemometers, which appear to have been lubricated with a grade of oil too heavy for the best results, Mr. Chapin reports all the equipment so far to be in first class condition. Several new instruments have been installed on the trip, including three anemometers of the buzzer type. Four of the stations have practically complete equipment, including maximum and minimum thermometers, rain gauge, anemometers, and thermo-hygrograph. Four other stations are nearly as completely equipped. All the stations also have duff hygrometers.

All the key fire-weather stations are now reporting by telegraph to the Spokane office of the Weather Bureau each day to aid the regional fire weather forecaster in localizing his predictions. The system established seems to be satisfactory. It is anticipated that after a year or two certain areas may need additional stations, but expansion is to be made only when the need is clearly shown.

Haig reports excellent progress in the white pine yield study computations being conducted in the Washington Office of Measurements. The volume table alignment charts, 30 in all, are now in the hands of Drafting. These represent two sets of charts for total height and log lengths for five species in cubic, Scribner, and International volumes. In connection with the yield tables themselves, the stand table work is practically finished. Stand table charts have been built, one for all species combined, and one each, six in all, for the most important species present in the type. These charts show for stands of various average diameters the number of trees above given lower diameter limits in per cent of total number of trees present. They apply only to stands of normal stocking. Similar charts for basal area, cubic volume, and board-foot volume are now being constructed. The composite yield table (in which the possible influence of composition has been disregarded) is now well advanced in alignment chart form. This chart should be finished early in July. The influence of composition on yield will be taken up after that, the tabulating machines being already engaged in computing values to be used in this phase of the study.

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#### SOUTHWESTERN FOREST EXPERIMENT STATION

At a conference with the Supervisors of the Coconino, Tusayan and Sitgreaves, plans were discussed for a new grazing investigation on these Forests. The work divides itself into two more or less distinct projects, (1) a survey of damage to forest reproduction by individual allotments under existing methods of grazing, and (2) a study designed to work out proper methods of utilizing the forest crop without damaging tree seedlings. The latter is to be a grazing project under the direction of Cooperrider in cooperation with Pearson.

Dr. F. E. Clements spent a day at the station, June 15th, en route to his summer field station at Manitau. He visited several of our sample plots and suggested experiments in rodent control and competition, both of which are very important in connection with our solution of the grazing problem.

The close of the month saw the station office installed in new quarters in the Babbitt Building in Flagstaff. For several years it has been the practice to maintain the permanent office at Fort Valley and a winter office in Flagstaff. Experience has demonstrated, how-

ever, that office work, including compilations and report writing can be handled more effectively in town, and that living conditions in the city are also more congenial for men with families. It is, therefore, the plan henceforth to maintain a year-round office in Flagstaff. The present quarters will accommodate grazing research as well as silvicultural research.

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MANUSCRIPTS RECEIVED

PACIFIC NORTHWEST

Rates of Growth of Immature Douglas Fir as Shown by Periodic Remeasurements on Permanent Sample Plots. W. H. Meyer. (Revision).

An Outline of Forest Fire Research in the Pacific Northwest. R. W. McArdle (File Report).

NORTHEASTERN

Timber Growing and Logging Practice in the Northeast. (Revised and Enlarged). S. T. Dana.

WASHINGTON OFFICE

A Modification of Bruce's Method of Preparing Timber Yield Tables. L. R. Reineke (J.A.R.)

Planimeters in Forest Mensuration. L. H. Reineke (To Jour. For.).

Curvilinear Multiple Correlation in Forest Research. Donald Bruce and E. H. Reineke. (Dept. Bul.)

Forests and Water in the Light of Scientific Investigations. R. Zon. A reprint of Senate Document 461 from Final Report, National Waterways Commission, 1912.

LAKE STATES

Silviculture as a Factor in Maintaining the Fertility of Forest Soils. Raphael Zon. (Paper delivered at the International Congress of Soil Science).

The Use of Soil Surveys in Forest Classification. J. Kittredge, Jr. (Paper delivered at the International Congress of Soil Science).

ROCKY MOUNTAIN

Light Intensities Required for Growth of Coniferous Seedlings.  
Bates and Roeser. (To Jour. Botany).

IN PRINT

Meyer, W. H. Shall I take up Forest Research? (The Annual  
Cruise, Oregon State College).

Isaac, Leo A. Douglas Fir has Long Seasonal Seeding Period.  
(The Annual Cruise, Oregon State College).

McCarthy, E. F. Weather and Forest Inflammability in the South-  
ern Appalachians. (Monthly Weather Review, March, 1927).

Pearson, G. A. Grazing and Reforestation. (Jour. For. May, 1927).

Kittredge, Jos. Jr. Thinning Young Red Pine. (Jour. For. May, 1927).

Averell, J. L. The Society of Swedish Foresters. (Jour. For. May,  
1927).

Pearson, G. A. Forest Grazing Control aids Tree Growth. (Yearbook,  
1926).

Zon, Raphael. Do Forests Prevent Floods? (American Forests and  
Forest Life, July, 1927).

Zon, Raphael. Taming the Father of Waters. (Journal of Forestry,  
May, 1927).

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## FOREST PRODUCTS - District 1

### Lodgepole Pine Utilization Study

The District is now undertaking a study of lodgepole pine utilization as a part of the general "Little-Used Species" project. This study as now planned will vary in two major respects from previous work on other species. The present-day utilization of the lodgepole differs greatly from those other woods, which means that the methods to be employed must differ to a considerable extent. Former studies have involved joint work by the Laboratory and the Districts, the former covering the utilization of the woods in the consuming centers of the Middle West and East. Since lodgepole pine is largely utilized within the region of production, District One with the cooperation of Districts Two and Four will assume full responsibility for the study.

In view of the vast amount of lodgepole pine on the National Forests, the study is considered an important one. Obviously, startling results cannot be anticipated, but from such work two objectives should be attained. A publication dealing with the properties and uses of lodgepole pine is planned, and the project leader should obtain a comprehensive knowledge of the entire lodgepole problem, which can be of great value to the Forest Service.

Mr. Whitney, who will handle the study, has already done considerable in assembling the data now available, and his recent visit to the Laboratory, June 12 to 30, was primarily in connection with this work. Before returning Whitney will spend at least a month in Districts Two and Four.

### Sawmill Studies

This project has received the major attention of the office during June. Considerable work has been accomplished on two proposed articles, one dealing with general sawmill utilization and the other with the problem of large and small log utilization. Both subjects are greatly complicated and require a vast amount of compilation and analysis. A third phase has been the final preparations for the depreciation of fire-killed white pine study to be conducted during July at the Dalkona Company mill.

Lumber Prices and Movement

<u>Prices</u>	<u>Annual 1925</u>	<u>Annual 1926</u>	<u>First Q. 1927</u>	<u>May 1927</u>
Idaho White Pine	\$37.37	\$37.77	\$38.48	\$37.36
Pondosa Pine	28.02	26.33	26.28	26.57
D. Fir and Larch	19.33	17.78	17.62	19.00
White Fir	20.14	19.10	16.46	18.50
Spruce	24.28	23.73	23.77	24.23
		<u>June, 1926</u>		<u>June, 1927</u>
Cut		179,111 M		149,846 M
<u>Shipments</u>		144,653 M		136,789 M

Miscellaneous

Dr. Sherrard of the Laboratory spent about a week in the District during June. The primary object of Sherrard's visit, upon his return from the West Coast, was to visit the mucic acid plant at Eureka, Montana, which is producing this product from the galactan found in Western larch. It was also possible for him to obtain some idea of the wood utilization problem in the Inland Empire through visiting a number of the manufacturing plants and a white pine logging operation.

About 800 feet of western larch lumber was selected and shipped to the Laboratory for the use of the Sections of Wood Preservation and Industrial Investigations.

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FOREST PRODUCTS - DISTRICT 6General Woods Waste Survey in the Douglas Fir Region

Messrs. Hodgson and Johnson spent most of the month in the field studying conditions on the logged-off lands of three companies in the lower Columbia River region and one in the Washington Cascade region. One of the companies on the River is an independent logger, while one of the other two is a logger-manufacturer. Since they are logging the same kind of timber under the same general conditions the results of the study should give a very good comparison as to the amount of wood left on the ground by companies in these classes. Hod son reports that the amount of material left in the woods by both of these operators is considerably above-average.

The third River operation included the re-logging area of the Crown-Willamette Paper Company near Cathlamet, Washington, which was mentioned in one of the reports last fall. Sample plots, for comparative purposes, were laid out on the area before and after relogging. They were located on ground and within types as nearly identical as it was possible to judge and the contents of the wood found on the ground, in both cases, was carefully measured and tallied. The resulting figures, which are presented below, in summarized form, are of interest in that they show what can be done at a profit, in the way of better utilization, under favorable conditions, by a pulp company in the Douglas fir region. All figures in this summary are worked out on the basis of one acre.

#### Summary of Waste Survey on Land Before and After Re-logging

##### Crown-Willamette Paper Company

Headings	:	Plot A Not re-logged	:	Plot B Re-logged
Net volume of original stand before logging	:		:	
Western hemlock	:	78,140 B.F.	:	72,612 B.F.
Silver fir	:	7,778 "	:	594 "
Total volume	:	85,918 "	:	73,206 "
Number of trees in original stand before logging	:	86 trees	:	70 trees
Volume of average tree in original stand	:	987 B.F.	:	1,045 B.F.
Amount of wood found on the ground as slash	:		:	
Class 1 sawlogs <sup>1</sup>	:	7,080 B.F.	:	0 B.F.
Class 2 sawlogs <sup>1</sup>	:	1,660 B.F.	:	0 B.F.
Class 3 sawlogs <sup>1</sup>	:	1,480 B.F.	:	200 B.F.
Total sawlogs	:	10,220 B.F.	:	200 B.F.
Pulp-wood (too small for logs)	:	1,704 "	:	1,368 "
Total slash	:	11,924 "	:	1,568 "
Wood left in excessively high stumps	:	830 "	:	702 "
Total amount of wood left on the ground	:	12,754 "	:	2,270 "
Total amount of wood left in per cent, based on net volume of original stand	:	14.8%	:	3.1%

<sup>1</sup>Working plan classification, not commercial log grades. Most of these logs are so small that they cannot profitably be taken out by the heavy steam-driven machinery.

These figures show that the re-logging work is saving more than 10,000 B.F. to the acre, or 11.7 per cent of the volume of the original forest and bear out the company's estimate of 10 to 15 per cent.

As mentioned in previous reports the relogging is being done with light mobile gasoline-driven machinery.

The company is apparently well satisfied with the results and costs. It intends to continue the use of small, gasoline-driven equipment, in some form, for reducing the loss of small logs and chunks. At the present time similar machinery has been moved into small and medium-sized green timber as an initial and final major logging operation. This new development seems to be giving satisfaction both as to costs and utilization, as well as in production.

Hodgson prepared an article entitled, "Logging Equipment Designed to Reduce Woods Waste" with nine photos for "The Pulp and Paper Industry." The article describes the light machinery now being used with success by the Crown-Willamette Paper Company in its relogging operation at Cathlamet, Washington.

#### Lumber Census

The survey of the 1926 lumber, lath, and shingle production in Oregon and Washington, in cooperation with the Bureau of the Census, was brought to completion during the month. In all, reports from 1289 companies were submitted to the Census Bureau as compared to 1655 companies from whom information was solicited.

#### Lumber Prices

As shown by the following lumber prices in the Douglas Fir region in 1926 were lower than any recent year except 1921. The industry seems to have received an average price of \$20.72 per M feet for Douglas fir in 1926, as compared to \$21.32 in 1925, \$22.70 in 1924, \$27.52 in 1923, \$22.45 in 1922, \$19.43 in 1921, and \$36.37 in 1920. In 1921, when prices dropped to a very low point, production dropped, or from 8,842 million feet in 1920 to 5,854 million in 1921; in this year prices were so low that curtailment in production was simply forced on many operators. Moreover, with 1920 a high-price year, many operators could afford to close down. Excepting 1921 and 1924 lumber production in the Douglas fir region has been increasing, even though lumber prices would suggest the contrary: 8,842 million in 1920; 5,854 million in 1921; 8,860 million in 1922; 10,644 in 1923; 9,931 million in 1924; 11,243 million in 1925, and not far from 12,000 million estimated for 1926. Right now it seems to be not a matter of operating for profit but rather to reduce losses, or in the case of many of keeping from going broke. Such policy can only be carried into effect through taking a loss in stumpage values and the lowering of utilization standards. Along with this is an attempt to liquidate stumpage holdings through operation.

Douglas Fir Lumber Prices  
West Side of Oregon and Washington

	Average yearly price						
	1920	1921	1922	1923	1924	1925	1926
1x4 "B" V. G. Flooring	:\$69.14	:\$47.52	:\$49.02	:\$52.99	:\$47.30	:\$42.48	:\$39.01
1x4 "B&Btr" S.G. Flooring	: 53.58	: 21.99	: 34.45	: 37.60	: 26.94	: 28.26	: 27.20
5/8x4 "B" Ceiling	: 52.86	: 21.59	: 33.38	: 36.50	: 25.96	: 27.46	: 26.07
1x6 "B&Btr" Drop Siding	: 54.97	: 22.33	: 36.14	: 39.85	: 30.63	: 34.25	: 33.69
"B&Btr" V.G. Stepping	: 84.24	: 60.80	: 64.03	: 69.43	: 64.77	: 63.00	: 60.38
1x8-10 No. 1 Com. Bds.&Shplp.	: 30.31	: 11.46	: 14.96	: 19.28	: 17.09	: 16.64	: 16.70
2x4-16' No. 1 Com. Dim.(S&E)	: 27.51	: 10.58	: 15.54	: 20.63	: 17.66	: 17.84	: 17.85
10x10-12;12x12 No.1 Com.Rough	:	:	:	:	:	:	:
Timbers	: 29.22	: 19.36	: 19.04	: 24.77	: 20.24	: 18.98	: 18.63
10x16-12x16 No. 1 Com. Rough	:	:	:	:	:	:	:
Stringers	: 31.18	: 16.92	: 20.13	: 25.89	: 21.84	: 20.19	: --
1x8-1x10 No. 2 Com. Bds. & Shp.	: 24.26	: 6.19	: 7.37	: 13.46	: 11.18	: 10.21	: 13.10
No. 3 Com. Bds. Shplp. & Dim.	:	:	:	:	:	:	:
(All lengths)	: 20.16	: 4.69	: 5.19	: 10.55	: 7.90	: 7.44	: 9.90
Average mill-run price <sup>1</sup>	: 36.37	: 19.45	: 22.45	: 27.52	: 22.70	: 21.32	: 20.72

<sup>1</sup> Statistics collected by West Coast Lumbermen's Association.

#### Spelman Transferred to Office

Howard R. Spelman, now on furlough and formerly of the Snoqualmie National Forest, has been assigned to the Office, reporting for duty on July 1. Mr. Spelman will fill the position made vacant by the resignation of Mr. Koroleff. He was graduated from both the New York State College of Forestry and the Yale Forest School. In 1919 he was employed as a Field Assistant on the Montezuma Forest. In 1920-21 he was employed with the Wayagmack Pulp and Paper Company, Flamand, Quebec, following which he was employed as an engineer with John R. Spelman, Consulting Engineer, New York. His first acquaintance with District 6 was on the Santiam where he spent a year in timber sale and general administrative work, after which he was assigned to the Snoqualmie Forest in charge of the Sauk Timber Sale.

#### E. C. Sherrard Visits District

Dr. Sherrard, Section of Derived Products, Forest Products Laboratory, on his way back to the Laboratory from California, stopped over in the District long enough to visit the Wind River Experiment Station, take in a west side National Forest timber sale, and several primary wood-using industries, aside from conferences within and without the Service.

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RANGE RESEARCH

WASHINGTON

Personnel Notes

Mr. Chapline left for the field June 30th. He expects to return about November 1, rejoicing, bringing his sheaves of forthcoming range research bulletins with him.

J. D. Schoeller of the Jornada Range Reserve is on detail in Washington, preparing a bulletin for publication.

Mrs. Motley, in charge of the mounting work and Dayton's assistant, resigned, June 30.

Forage Investigations

Routine Work of June

Five plant collections were sent to the Bureau of Plant Industry for identification during the month. Ten collections were reported on to the field, and 54 prints of economic-notes cards furnished. 454 plant specimens were mounted during the month, and approximately that number filed in the herbarium.

Botanists Return to Washington

Mrs. Agnes Chase, assistant agrostologist, has returned from a (self-paid) trip to Europe, chiefly to study grass types at the DeCandolle herbarium in Geneva, Switzerland. Her trip was very successful; she has spikelets, photographs, and notes of an enormous number of grass types that, until recently, were inaccessible to the scientific world, and those will be invaluable in studies of American and other grasses. Mr. Tidestrom has returned from Arizona. He was delighted with his reception by Prof. Thornber, Mr. McGinnes, and other officials of the University, and by officers of the Forest Service. His studies in the University herbarium and collections will add greatly to his Flora of Arizona, which probably will be issued jointly with Prof. Thornber.

The Golden Rule in Action (or Don't Treat Uncle S. as Frugally as He Has to Treat You)

The District Forester at San Francisco recently inquired how much it would cost to supply the District 115 reprints of the beautifully illustrated (in colors) article in the May issue of the National Geographic Magazine on western (largely Californian) flowers. The following magnanimous letter has been received from the National Geographic Society:

" \* \* \* The National Geographic Magazine does not sell its issues in bulk; and we are already overwhelmed by requests from members for extra copies of this particular number.

"We are mindful, however, of the many courtesies and friendly cooperation offered the Magazine by the Forest Service and therefore have pleasure in presenting to the Service the 115 copies requested, the understanding being that they are to be given to the Foresters of the California branch. It is necessary to send the entire number since we do not have separates, or reprints.

"Assuring you of our pleasure in meeting your wishes and the belief that this will be of educational value to the splendid force of men who are doing so important a work for the country, I am,

Sincerely yours,

(Signed) JOHN OLIVER LA GORCE,  
Vice President."

#### Botanically Interesting Plants of the Month

1. Beartooth N. F. C. O. Williamson's no. 13, serial no. 52501. Aplopappus villosus (Rydb.) Blake (~~Pyrrocoma villosa~~ Rydb.). Apparently a first record for Montana.
2. Beartooth N. F. C. O. Williamson's nos. 32 and 34, serial nos. 52529 and 52530. Oreocarya spiculifera Piper. Apparently a great extension of range eastward and a first record for Montana.
3. Teton N. F. Bruce L. Coulter's no. 201, serial no. 52953, Stipa arida M. E. Jones, apparently, but young and somewhat depauperate. Dr. Hitchcock states that this grass has been unknown from Wyoming.

#### Sweetclover Seed for the Colorado and Montezuma Forests

As is well known Secretary Jardine has taken a personal interest in the possibilities of sweetclover as a range plant. District Forester Peck recently requested a shipment of 10 pounds (half of white, and half of yellow) of sweetclover seed to the Supervisors of both the Colorado and the Montezuma National Forests. Acting Agronomist Harry N. Vinall of the Bureau of Plant Industry, writes that this seed (unscarified) has been shipped. It is expected to use this seed in fall planting.

### Bulb Bluegrass from Oregon

In the Monthly Report for May was a notice by Mr. D. C. Ingram relative to the Old World Bulb Bluegras, or Meadow grass (Poa bulbosa L.) Technical Assistant Lee P. Brown of the Crater National Forest has now submitted specimens of this species which he collected near Medford. Apparently this is the first authentic collection received in Washington of this bluegrass from the State of Oregon. Prof. Hitchcock included the species in Abrams' Illustrated Flora of the Pacific States (1923) merely by a brief note that the viviparous form of the species had been twice collected in Washington. He now states that he has gotten material of it recently from near Denver, Colorado, and other western stations, so that apparently the species is becoming established in the West. A part of Mr. Brown's material has been deposited in the U. S. National Herbarium.

There is some very interesting correspondence concerning this species from the District Forester at Portland and Supervisor Rankin of the Crater. Mr. Rankin reports that this blucgrass was accidentally introduced (presumably from being mixed with imported alfalfa seed) into the Rogue River Valley, and that it is a purely winter-spring pasture and range grass, being green from Sept.-Oct. until May-Junc, after which it hay-cures and is readily eaten down by livestock. It reproduces by underground bulbs and also by being viviparous (living plants formed in the inflorescence). Mr. Rankin states that Prof. Reimer of the Southern Oregon Expt. Sta. believes this grass has considerable possibilities in seeding foothill ranges, as it produces better and more feed than many of the grasses now growing on such areas and, in addition, is free from injurious awns. Mr. Brown reports that the species would not stand repeated burning. The District Forester states that Mr. Douglas C. Ingram recently visited "The Desert" east of Medford and found that Poa bulbosa was greatly eaten by the cattle grazing there.

### The Nomenclature of Douglas Fir

Mr. Tidestrom, since the appearance of Mr. Sudworth's Check List, has been comparing the tree nomenclature in the mss. of his Arizona Flora with that of the Forest Service. He now states that he is obliged to adhere to the name used in his Flora of Utah and Nevada (p. 54) for Douglas fir, viz: Pseudotsuga mucronata (Raf.) Sudworth. In his original publication of the combination Pseudotsuga mucronata (Contrib. U. S. Nat. Herb. 3: 266. 1895) Mr. Sudworth indicated the untenability of the name P. taxifolia. He later (first edition of the Check List, 1898) reverted to P. taxifolia on the ground that it is founded on Abies taxifolia Poiret (in Lamarck). In the April report of the Branch attention was called to the Bureau of Plant Industry (and American Code) rule,

"Once a homonym always a synonym," There are several (and different) species known as Pinus taxifolia and obviously not more than one of them can be valid. It is everywhere agreed that in the last analysis the taxifolia in the combination Pseudotsuga taxifolia is based on Pinus taxifolia Lambert, and hence untenable, which is a homonym. The trouble with taking up "Abies taxifolia Poiret," as Mr. Tidestrom points out, is that Poiret frankly bases it on the untenable Pinus taxifolia Lambert and, in fact, attributes it (of course erroneously) to Lambert himself, definitely citing Lambert's page (51), plate (33) and date (1803). Under the American Code of nomenclature, which we are using in the Department of Agriculture, that citation of Poiret's automatically throws "Abies taxifolia," whether of Lambert or of Poiret, out of court because of the homonymy of Pinus taxifolia Lambert on which it is based. It is noteworthy that Dr. Britton, the author of the combination Pseudotsuga taxifolia (Lamb.) Britt, 1889, has himself discarded (see, for instance, Britton & Shafer's "North American Trees," 1908) that combination and accepted P. mucronata as the proper name for Douglas fir. We have, therefore, the extraordinary spectacle of two eminent American dendrologists mutually rejecting their own and accepting the other's name for a very important western timber species. The full synonymy of Douglas fir is shown on page 64 of Abrams' "Illustrated Flora of the Pacific States," and which also adopts P. mucronata as the proper name. It may be of interest to add that the oldest Pinus taxifolia (that of Salisbury, 1796) appears to be a synonym of Abies balsamea (L.) Mill., the eastern Balsam Fir.

#### "Standardized Plant Names"

On June 22 Acting Forester Sherman wrote Mr. J. Horace McFarland, of Harrisburg, Pa., Chairman of the American Joint Committee on Horticultural Nomenclature, agreeing to adopt the English plant nomenclature of the book, "Standardized Plant Names," prepared in 1923 by a subcommittee of three of that Committee, in Forest Service usage except where the usage of that work conflicts with Mr. Sudworth's Check List and in those relatively few other cases where it is believed that established western usage, or other reasons equally cogent, impel us to adopt a different nomenclature. The following letter has now been received:

"For yours of June 22, referring to Standardized Plant Names and agreeing to accept it as authority, with certain exceptions, I am very thankful. I do not see that we could possibly ask more. Yours truly, J. HORACE McFARLAND."

### DISTRICT 3

W. G. Koogler, in charge of District 3 range reconnaissance, spent several days with us before starting his Tonto work.

Trips were made to various vegetative associations on the Tonto and Crook for field discussion of the application in reconnaissance of the indications of research conducted locally. Koogler intimated that browse, chaparral associations, containing a large number of grass and weed species, furnish a problem for reconnaissance - some place to test the eye and wit when grasses, weeds and a few species of high altitude browse have been the usual diet. But, then, the Tonto is the forest different. If any one has doubts, ask Dayton or better still, come down and estimate Roosevelt's back yard with Koogler; see how many of the more than one hundred common browse species can be differentiated at one hundred yards.

R. R. Hill, Inspector of Grazing from the Washington office, paid us a visit. We certainly appreciate the interest shown by the Father of District 3 C-reconnaissance and studies. We also value the good suggestions made, the support given.

In cooperation with Dr. Taylor of the Biological Survey, a study of rodent influence was started in a small way in the browse-grass range. Rodent exclosures were constructed in the plots now under study, the same being fenced against stock. For some vegetative associations, the individual influence exerted by grazing animals may now be measured. Vegetative behavior under total protection, when grazed by small rodents alone, when grazed by rabbits and small rodents, when used by cattle, rabbits and small rodents promises to furnish a valuable comparison.

The spring examination of the area damaged by smelter smoke in the Clarkdale-Jerome mining district was made between May 15th and 21st, Pearson, of the Southwestern Forest Experiment Station, Supervisor Grubb of the Prescott Forest, and Cooperrider of Grazing Research participating.

A more extensive examination of the area of intense gas ( $SO_2$ ) concentration disclosed a somewhat larger area of dead brush than has heretofore been encountered. From the indications, tentative conclusions, formerly reported, remain unchanged. They are in brief as follows:

1. That forest values are predominantly those of watershed of high importance.
2. That no appreciable timber values are concerned.

3. That brush in the areas of high concentration of gas is dead or dying and herein little cover except grass can be maintained.

4. That certain areas, especially the steep, east slope of Mingus Mt. in the greenstone structure, quartz porphyry, and sandstone exposures, where the dominant cover has been brush or where grass cover has been rendered inadequate by overgrazing, should be protected from grazing, at least until grass cover is established.

5. That species of vegetation subject to an accumulative effect of sulphur dioxide are damaged in areas of secondary concentration of gas. Common species of this sort are conifers, usually pinon pine in region, evergreen shrubs, and shrubs that are leafless and green-barked. Noticeable damage of such species marks the channels of lesser gas concentration outside the zone of intense concentration. These areas will reflect, in tendency toward serious damage any average increased ore smelting and the cumulative effect, should such be the outcome, from years of exposure.

6. The areas of intense concentration of gas would seem to furnish an example of the effect of fire in establishing grass lands before the advent of white men. Established grasses make an exceptional seasonal (spring) growth and seem to reproduce rapidly vegetatively. Elimination of competitors, browse and fleshy herbs, is probably the cause. Muhlenbergia porteri established under the protection of mesquite browse is a striking example of exceptional growth. Some browse associations, particularly the legumes, were probably established recently, grazing animals being the carriers. Grazing and fire protection reduced the grass fire to a minimum allowing for strong competition by and establishment of shrubs. Smelter gas is destroying the shrubs and preventing their reproduction very much as does frequent burning, but without apparent damage to the grass.

Cooperrider left Roosevelt for Flagstaff on May 29 to search for a suitable site in which to conduct the investigation of range management and utilization in the sawtimber type on the Coconino Plateau. This is to be a cooperative project with particular emphasis given to grazing damage to natural reproduction of western yellow pine. The cooperators are the Southwestern Station and Grazing Research in District 3.

Copple will join Cooperrider in Flagstaff in July. The browse study has occupied his time during June. The present season has offered excellent opportunity for observation of growth, grazing utilization and life behavior of browse species during the dry period preceding the summer rainy season.

On June 7 a meeting was held with the Supervisors of the Sitgreaves, Coconino and Tusayan Forests. Methods of checking pine reproduction damaged by grazing and the place of research in assisting the forests in such work was discussed. Pearson of the Experiment Station and Cooperrider of Grazing Research representing Research.

Cooperrider has spent a large part of June in a sizeup of the reproduction-grazing problem on the Coconino Plateau. A number of allotments suggested for study by the Supervisors have been examined. Tentative selections of fenced ranges for study of range management and utilization in the sawtimber type have been made subject to the cooperation that may be secured in managing the stock.

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### JORNADA RANGE RESERVE

#### Range Conditions and Precipitation

The weather conditions for the month have been uniform, with hot sunny days and warm, but not uncomfortable nights. The precipitation records for eighteen stations located on the Reserve vary from 0.03 inches at headquarters, to 0.36 inches at Ropes Spring.

The range is holding up well under adverse moisture conditions, and no shortage of forage is anticipated in the immediate future. The spring weed crop was cut short by lack of moisture, and the grasses are making little growth at this time.

Cattle are in excellent condition, and the prospects for the season are very good.

The water situation is still a problem which is taking most of the ranch foreman's time. All stock is being watered from the two wells which he has been able to keep in working condition. A new gasoline engine has helped.

#### Investigative Work

Twenty-five quadrats upon which charting was suspended in 1924 were charted and computed the first of the month, and forwarded to Schoeller at Washington.

A reconnaissance for the purpose of securing utilization and spring weed crop data, and computation of the data obtained has been completed.

Mr. Campbell installed several Livingston atmometers at various stations scattered over the Reserve. This equipment is loaned by the University of Chicago and the attention required to keep the atmometers going is given in connection with other work.

Personnel

Mr. Campbell returned to the Jornada from scholastic leave at the University of Chicago on May 25, and Director Schoeller left for a six weeks detail at Washington on May 30, to work up a bulletin on "Carrying Capacity of Southwestern Ranges."

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THE EDITOR

Two of the seven publications listed in last month's report as at the Printing Office have been delivered - the Salt Circular reprint and the Laboratory's Pulpwood Bulletin. Two of the three Requirements reports still at the G.P.O. are looked for daily (Central Hardwoods and Douglas Fir); the D-1 Requirements report, the "Brain Book" and the Laboratory's Control of Seasoning Defects in Red Gum not for another month or so.

The Art of Salesmanship - "What Are You Selling?"

The desirability in report writing, as in salesmanship and duck hunting, of aiming at the bird rather than at the flock was mentioned last month. The author was likened to the salesman in that each has something to dispose of to a public that may be in need of the commodity but is quite likely to have to be persuaded to accept it. If the salesman's first consideration must be to whom he is selling his wares, his second must surely be what he has to sell. Here again is a likeness between the salesman and writer. Not every writer is cognizant of what he is trying to "sell" to his reader. He has not yet consciously recognized and defined it. Very often it has never occurred to him that what he has to dispose of may not be what seems to him the most valuable aspect of his research.

An automobile sales manager once listed for his salesmen a number of possible items of sale and asked them to specify which they were selling to certain types of customer. They were not merely selling automobiles; they were selling:

- Quicker transportation.
- Convenient means for travel.
- A means of "getting ahead of the Joneses!"
- Better health and longer life.
- Widened horizons and broader views.
- Style.
- Power.
- Recreation.
- The Saving of time.
- The elimination of distance barriers.
- Outdoors to city dwellers.
- Urban conveniences to suburbanites, and so on.

If we are to have our public in mind in the writing of circulars and bulletins, it is just as necessary to consider what we are giving them. Perhaps the first and most needful consideration is whether we are giving them data or evidence, raw facts or workable

conclusions. The fruits of toil are not necessarily either edible or digestible to those who have not the gleaner's interest in them. Generally the purpose of a Department publication is to make available something more usable than raw facts.

What have we for sale, time and motion studies---or a cheaper and more constructive logging operation? Germination percentages---or better nursery practice? The (to us) fascinating operation of a newly perfected meteorological measuring device---or better fire protection? A mathematical formula revolutionizing forest mensuration---or a means of putting reforestation on a sounder economic basis? An exhaustive excursion into State and county records---or a clarion call for more progressive legislation? An array of data imposing enough to "knock 'em flat"---or adequately supported conclusions that put a tool in the reader's hand and a new idea in his head?

What are you selling? Just a project completed? Just compiled data? Just a theory you've formulated and feel sure has been substantiated? Just another publication to go in your and other fellows' future bibliographies? Erudition, perhaps? A step beyond what some other fellow did? Just the required record of your work that has to be ground out? Or, instead of what you prefer to give him or must give him, are you perchance giving the reader what he needs to have, prepared in the way that will be most palatable to him and in which it can be most readily assimilated?

The writer who ponders well what it is that he has to "sell" will, other things being equal, achieve a report that is far more coherent than that of the author who does not consider such self-questioning important. If in addition he determines to whom and for whom he is writing, and endeavors to give that reader what he can use in a direct and convincing manner, he will have a report that has in it the elements of permanency and that will in all essentials be proof against the worst that any editor can do to it.

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